



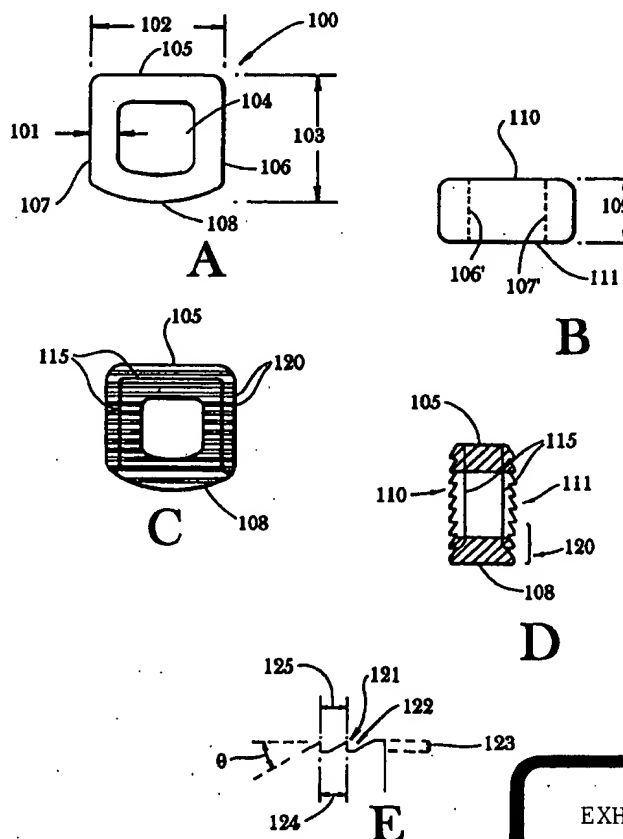
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61F 2/44	A1	(11) International Publication Number: WO 99/09914 (43) International Publication Date: 4 March 1999 (04.03.99)
<p>(21) International Application Number: PCT/US98/17769</p> <p>(22) International Filing Date: 27 August 1998 (27.08.98)</p> <p>(30) Priority Data: 08/920,630 27 August 1997 (27.08.97) US</p> <p>(71) Applicant (for all designated States except US): UNIVERSITY OF FLORIDA TISSUE BANK, INC. [US/US]; 1 Innovation Drive, Alachua, FL 32615 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): GROOMS, Jamie, M. [US/US]; 1 Innovation Drive, Alachua, FL 32615 (US). CARTER, Kevin, C. [US/US]; 1 Innovation Drive, Alachua, FL 32615 (US). SANDER, Tom [US/US]; 1 Innovation Drive, Alachua, FL 32615 (US). DULEBOHN, David, H. [US/US]; Suite 3, 2900 14th Street, Naples, FL 33940 (US).</p> <p>(74) Agent: BENCEN, Gerard, H.; Gerard H. Bencen, P.A., 426 Anderson Court, Orlando, FL 32801 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</p>	

(54) Title: CORTICAL BONE CERVICAL SMITH-ROBINSON FUSION IMPLANT

(57) Abstract

An implant composed substantially of cortical bone is provided for use in cervical Smith-Robinson vertebral fusion procedures. The implant is derived from allograft or autograft cortical bone sources, is machined to form a symmetrically or asymmetrically shaped (e.g. a substantially "D"-shaped) implant having a canal running therethrough according to methods of this invention, and inserted into the space between adjacent cervical vertebrae to provide support and induce fusion of the adjacent vertebrae. Osteogenic, osteoinductive or osteoconductive materials may be packed into the canal of the implant to expedite vertebral fusion and to allow autologous bony ingrowth.

EXHIBIT
C

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/17769

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61F2/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 950 296 A (MCINTYRE JONATHAN L) 21 August 1990 cited in the application	1
A	see the whole document	8,9,13, 17,26, 31,32, 37,41, 50, 53-55, 57,58
A	WO 97 25945 A (GRIVAS NICHOLAS E ; CARTER KEVIN (US); DULEBOHN DAVID (US); GROOMS) 24 July 1997 see the whole document	1,13,17, 26,31, 32,37, 41,50, 53-55, 57,58

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

18 December 1998

Date of mailing of the international search report

28/12/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kanal, P

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/17769

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	US 5 728 159 A (RAINEY THOMAS P ET AL) 17 March 1998	1
A	see abstract; figures ---	2,5,6,9
P,X	WO 98 17209 A (HOECK JAMES E VAN ;SDGI HOLDINGS INC (US); BOYD LAWRENCE M (US); M) 30 April 1998	1
A	see the whole document ---	2-9
A	US 3 848 601 A (MA G ET AL) 19 November 1974 see abstract; figures ---	1
A	WO 97 14378 A (DANEK MEDICAL INC) 24 April 1997 see abstract -----	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/17769

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4950296	A	21-08-1990	NONE		
WO 9725945	A	24-07-1997	US	5814084 A	29-09-1998
			AU	1700597 A	11-08-1997
			EP	0876129 A	11-11-1998
US 5728159	A	17-03-1998	NONE		
WO 9817209	A	30-04-1998	AU	4994697 A	15-05-1998
US 3848601	A	19-11-1974	NONE		
WO 9714378	A	24-04-1997	AU	7394496 A	07-05-1997
			AU	7394996 A	07-05-1997
			EP	0855886 A	05-08-1998
			EP	0855887 A	05-08-1998
			WO	9714377 A	24-04-1997
			US	5782830 A	21-07-1998